

REMARKS

The claims above are provided for reference. No amendment has been made.

In the Final Office Action, the Examiner rejected claims 9-16 pursuant to 35 U.S.C. § 101 and 112, first paragraph. Claims 17-19 and 21 were rejected pursuant to 35 U.S.C. § 102 (a,e) as anticipated by Forjdh (U.S. Patent No. 6,307,915). Claims 28-30 and 34-36 were rejected pursuant to 35 U.S.C. § 103(a) as unpatentable over Forjdh in view of Bertsche (U.S. Patent No. 6,487,274). Claims 1-8 and 22-27 were allowed. Applicants respectfully request reconsideration of the claims 9-19, 21, 28-30 and 34-36, including independent claims 9, 14, 17, 28 and 34.

Claims 9-16 were rejected as not supported by either an asserted utility or a well established utility. Independent claims 9 and 14 provide an asserted utility, "an interface system for synchronizing an x-ray imaging device with pulses of a x-ray machine." The preambles provide this assertion of utility. For claim 9, the utility is further born out by noting that the low dose circuit is responsive to "an x-ray source" high voltage power-on signal and a radiation off signal. Trigger signals are generated in response to these signals, providing support for the synchronization of the preamble. For claim 14, the input is claimed as being from the x-ray machine. An output connected with a trigger circuit provides an electronic panel scanning trigger signal in response to the input. Both claims 9 and 14 assert synchronization as the utility in the preamble and provide components in the body of the claims indicating triggering. The x-ray imaging device is clearly synchronized with the x-ray machine using triggering.

Independent claim 17 requires generating x-ray pulses and an electric signal with an x-ray machine where imaging is synchronized with the x-ray pulses as a function of the electric signal being input to an imaging device. Applicant previously noted that Forjdh starts scans by detecting x-rays, not an electric signal input to an imaging device. In particular, Forjdh uses x-rays to trigger scanning (abstract). Image capture starts once a sufficient number of reference

pixels reach a threshold (Col. 3, lines 53-57). The reference pixels used for triggering are part of the array for detecting x-rays (Col. 3, lines 49-53). Forjdh triggers scanning by detecting x-rays, not by a scan trigger input connected with a data output of the x-ray source separate from the x-ray output.

In response, the Examiner noted that the "signal" in claim 17 is being interpreted as the output of Forjdh's reference pixels 15. However, the reference pixels are part of the imaging device. The imaging device generates the reference signals internally. In Forjdh, the x-rays are input to the imaging device. The signal is then generated in response to the x-rays. The x-rays are not the electric signal. Generating the electric signals within the imaging device in Forjdh does not provide for synchronization by an electronic signal input to the imaging device. Claim 17 claims synchronizing with the x-ray pulses as a function of the electric signal being input to the imaging device.

Dependent claims 18-19 and 21 depend from independent claim 17 discussed above, so are allowable for the same reasons. Further limitations distinguish the dependent claims from Forjdh. For example, Forjdh does not disclose generating trigger signals for less than all of the beginnings of x-ray pulses as claimed in claim 19; and the high dose and low dose modes as claimed in claim 21.

Independent claim 28 claims triggering a scan prior to generating low dose x-rays and in response to preparing an x-ray source for generating low dose x-rays. Applicants previously noted that Forjdh triggers in response to detected x-rays, not prior to generation of x-rays. Bertsche discloses taking a verification x-ray image prior to therapy (Col. 1, line 66 - Col. 2, line 8). Low-energy and high energy x-rays are used in a repeating sequence to acquire images for therapy (Col. 6, lines 5-13). Bertsche switches between x-rays, but does not disclose triggering in response to preparing an x-ray source for generating x-rays.

The Examiner noted that it would have been "inherent in operating the Forjdh/Bertsche system, ie forming a low dose (scout) image for patient registration and then irradiating and imaging with high dose x-rays for therapy even though claims 28 and 34 omit the step of therapeutic irradiation despite the fact that the claim preambles declare that the steps perform

therapy.” First, the claim preamble of claim 28 notes the acts are for controlling imaging in an x-ray therapy system, not for performing therapy. Second, forming a low dose image for patient registration and then irradiating and imaging with high dose x-rays for therapy do not inherently provide or even suggest triggering a scan prior to generating low dose x-rays in response to preparing the x-ray source for generating the low dose x-rays. The Forjdh/Betsche system forms low dose and high dose images. For low-dose imaging, there is no suggestion in Forjdh/Betsche to do anything other than prepare the x-ray source for low dose x-rays, generate the low-dose x-rays and generate a low dose image by scanning during the generation of x-rays. Scanning to acquire the low-dose image is not scanning prior to generating the low dose x-rays. The x-rays are needed to form the low-dose image. Scanning for the high dose images uses high dose x-rays, so the scans performed for high-dose imaging are not responsive to preparing the x-ray source for low dose x-rays. The Forjdh/Betsche system does not inherently provide triggering a scan prior to generating low dose x-rays and in response to preparing an x-ray source for generating x-rays.

Dependent claims 29 and 30 depend from claim 28, so are allowable for the same reasons.

Independent claim 34 claims generating low dosage x-ray radiation, avoiding scanning of the imaging device during the generation of low dosage x-ray radiation and scanning the imaging device after the generation of the low dosage x-ray radiation. The Examiner noted that it would have been “inherent in operating the Forjdh/Betsche system, ie forming a low dose (scout) image for patient registration and then irradiating and imaging with high dose x-rays for therapy even though claims 28 and 34 omit the step of therapeutic irradiation despite the fact that the claim preambles declare that the steps perform therapy.” First, the claim preamble of claim 34 notes the acts are for controlling imaging in an x-ray therapy system, not for performing therapy. Second, forming a low dose image for patient registration and irradiating and imaging with high dose x-rays for therapy do not inherently provide or even suggest generating low dosage x-ray radiation, avoiding scanning of the imaging device during the generation of low dosage x-ray radiation and scanning the imaging device after the generation

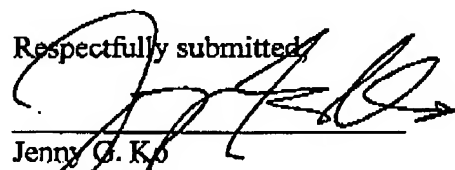
of the low dosage x-ray radiation. The Forjdh/Betsche system forms low dose and high dose images. For low-dose imaging, there is no suggestion in Forjdh/Betsche to do anything other than generate the low-dose x-rays and generate a low dose image by scanning during the generation of x-rays. Scanning to acquire the low-dose image is not avoiding scanning during the generation of the low dose x-rays. The Forjdh/Betsche system does not inherently provide generating low dosage x-ray radiation, avoiding scanning of the imaging device during the generation of low dosage x-ray radiation and scanning the imaging device after the generation of the low dosage x-ray radiation.

Dependent claims 35 and 36 depend from claim 34, so are allowable for the same reasons.

CONCLUSION:

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, he is respectfully requested to call the undersigned at (650) 694-5810 or Craig Summerfield at (312) 321-4726.

Respectfully submitted,


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